

Appl. No. : 09/762,568
Filed : July 30, 2001

AMENDMENTS TO THE CLAIMS

1. **(Previously presented)** A plasmid vector comprising:
(D1) a retroviral integrase gene;
(D2) a segment of DNA forming a region for controlling the expression of the integrase gene; and
(D3) a segment of DNA serving as an integrase recognition region when the integrase resulting from the expression of D1 catalyzes integration, wherein the integrase recognition region (D3) comprises a connecting sequence of terminal bases formed when one long terminal repeat (LTR) is joined to another LTR.
2. **(Currently amended)** The plasmid vector of Claim 1 further comprising (D4) a ~~gene of interest (GOI)~~segment of DNA to be integrated into the genome of host cells.
3. **(Canceled)**
4. **(Currently amended)** The plasmid vector according to claim 1, wherein the integrase recognition region (D3) comprises a region formed by two LTRs joined together, and wherein both of the DNA segments (D2) and (D3) are situated within the ~~connecting sequence of terminal bases~~ region formed by the two LTRs joined together.
5. **(Previously presented)** The plasmid vector according to claim 1, wherein a DNA segment encoding a nuclear localization signal is further added to the integrase gene.
6. **(Previously presented)** The plasmid vector according to claim 1, wherein the integrase gene is isolated from viruses belonging to Retroviridae.
7. **(Previously presented)** The plasmid vector according to claim 6, wherein the viruses belonging to Retroviridae are from the subfamily Oncovirinae.
8. **(Currently amended)** A cell having introduced therein the plasmid vector according to claim 2, wherein said cell is an isolated host cell or transgenic chicken cell.
- 9.-14. **(Canceled)**
15. **(Currently amended)** A method for producing a useful substance comprising the steps of:
providing the plasmid vector according to claim 2, wherein the segment (D4) of the plasmid vector includes a region encoding a protein and a control region for controlling the expression of the protein;

introducing the plasmid vector into a host cell, wherein said host cell is an isolated host cell or transgenic chicken cell; and

allowing the DNA segment (D4) to integrate into the genome of the host cell such that the protein encoded by the DNA segment (D4) is expressed in the host cell to produce the useful substance.

16. **(Withdrawn)** A method for producing a useful substance comprising the steps of:
providing the plasmid vector according to claim 2, wherein the segment (D4) of the plasmid vector includes a region encoding a protein and a control region for controlling the expression of the protein;

introducing the plasmid vector into a bird embryo; and

allowing the DNA segment (D4) to integrate into the genome of cells that constitute the embryo to produce a bird that has incorporated the DNA segment (D4) in somatic cells such that the useful substance is produced in an egg laid by the bird that has incorporated the DNA segment (D4).

17. **(Withdrawn)** A method for producing a useful substance comprising the steps of:
providing the plasmid vector according to claim 2, wherein the segment (D4) of the plasmid vector includes a region encoding a protein and a control region for controlling the expression of the protein;

injecting the plasmid vector into an embryo in an egg of a bird;

allowing the DNA segment to integrate into the genome of cells that constitute the embryo;

hatching the egg to obtain a first generation bird the germline cells of which have incorporated the DNA segment; and

obtaining the useful substance in eggs laid by birds selected from the group consisting of:
a transgenic bird heterozygous with respect to the DNA segment produced by
allowing the first generation birds to naturally mate or artificially fertilizing the first generation birds;

a transgenic bird heterozygous or homozygous with respect to the DNA segment produced by allowing the heterozygous birds to naturally mate or artificially fertilizing the heterozygous birds; and

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a transgenic bird heterozygous or homozygous with respect to the DNA segment produced by continuing to cross the heterozygotic or homozygotic birds through successive generations.

18. **(Withdrawn)** A method for producing a useful substance comprising the steps of:
providing the plasmid vector according to claim 2, wherein the segment (D4) of the plasmid vector includes a region encoding a protein and a control region for controlling the expression of the protein;

introducing the plasmid vector into primordial germ cells collected from a bird embryo at an early developmental stage;

allowing the DNA segment of the plasmid vector to integrate into the genome of the primordial germ cells;

injecting the primordial germ cells that have incorporated the DNA segment into an early embryo in an egg laid by other individuals;

hatching the egg to obtain a first generation bird the germline cells of which have incorporated the DNA segment; and

obtaining the useful substance in eggs laid by birds selected from the group consisting of:
a transgenic bird heterozygous with respect to the DNA segment produced by allowing the first generation birds to naturally mate or artificially fertilizing the first generation birds;

a transgenic bird heterozygous or homozygous with respect to the DNA segment produced by allowing the heterozygous birds to naturally mate or artificially fertilizing the heterozygous birds; and

transgenic bird heterozygous or homozygous with respect to the DNA segment produced by continuing to cross the heterozygotic or homozygotic birds through successive generations.